

**ABSTRACT**

Grout slurries are provided that have high thermal conductivities of greater than about 1.4 Btu/hr-ft-°F and low hydraulic conductivities ranging from about  $5 \times 10^{-9}$  cm/s to about  $1 \times 10^{-8}$  cm/s. Such grout slurries comprise water and a grout composition that is available as a one-sack product. The grout composition includes calcium bentonite present in an amount of from about 15% to about 45%, sodium bentonite present in an amount of from about 15% to about 45%, silica flour present in an amount of from about 10% to about 35%, and flaked graphite present in an amount of from about 10% to about 75%, all by weight of the grout composition. Further, methods of installing a conduit such as a heat transfer loop in a hole in the earth include placing the conduit in the hole, forming the foregoing grout slurry, and placing the grout slurry in the hole adjacent to the conduit.